FORD COUNTY SOILS

Soil Report No. 54
Revised

By
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> **"It must be remembered that the productive power of the soil is the basic support of all prosperity."**
> **—C. G. HOPKINS**

> **"It is the duty of every landowner to see that his land when he leaves it is as good or better than when he received it."—J. G. MOSIER**

INTRODUCTORY NOTE

The original edition of the Ford County Soil Report, published in 1933, having become exhausted, this revised edition is issued to utilize a small remaining supply of the original maps made in 1929. The revisions in the text reflect to some extent the advances made in soil knowledge in the eight years since the original report was published; the map remains unchanged.

Tho the present authors assume full responsibility for this revised edition of the report, special recognition is due Dr. Eric Winters for his assistance in the making of the soil map.

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FORD COUNTY SOILS

By R. S. Smith, Herman Wascher, and Guy D. Smith[1]

GEOGRAPHICAL FEATURES OF FORD COUNTY

FORD COUNTY is located in the east-central part of Illinois. It is peculiar in shape, having a north-south length of about 41 miles, and varying in width from 6 miles to 28 miles. It embraces an area of about 479 square miles.

Ford county, named after Thomas Ford, the eighth governor of Illinois, is the youngest county in Illinois, having been formed in 1859 by splitting off from Vermilion county. At the same time the decision was reached by popular vote to organize the new county it was decided to locate the county seat at Paxton, which had been laid out two years before under the name of Prairie City, and then changed to Prospect City, which name it held until the fall of 1859. The name of the town was changed from Prospect City to Paxton because Sir Richard Paxton of England was organizing a colony to settle in Illinois, and it was hoped that such a change would influence him to settle in the town named after him. These hopes were not realized, however, Sir Richard settling elsewhere.

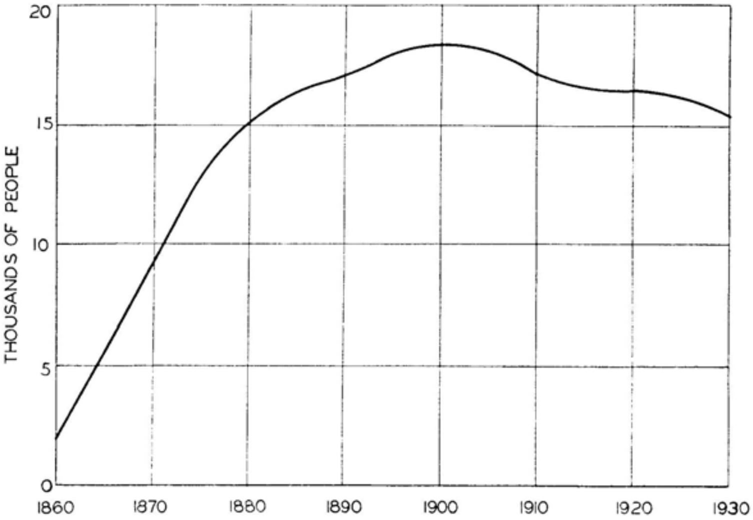

Fig. 1.—Growth in Population of Ford County

There was a steady growth in the number of inhabitants in Ford county until 1900 when, according to the U. S. Census, the number reached about 18,000. Since that time the population has gradually decreased to about 15,000.

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[1] R. S. Smith, Chief in Soil Physics and Soil Survey; Herman Wascher, Assistant Chief in Soil Survey; Guy D. Smith, Associate in Soil Physics and Soil Survey. Authors of original edition were R. S. Smith, E. E. DeTurk, F. C. Bauer, and L. H. Smith.

The population of Ford county increased rapidly from 1860 to 1880 and then slowly to the maximum in 1900, since which time there has been a steady decrease amounting to a little over 15.6 percent during the last thirty years (Fig. 1).

Ford county has excellent transportation facilities. It is served by five railway lines: the Wabash; the Nickel Plate; the Toledo, Peoria, and Western; and two lines of the Illinois Central. The hard road system is so laid out that no farm in the county is over 4½ miles from a hard road. Many of the secondary roads are either oiled or graveled.

Agricultural Production

The agriculture of Ford county is well balanced with respect to diversification. Considering the fact that about 70 percent of the farms are operated by tenants, the livestock industries make a very satisfactory showing. Slightly over 94 percent of the area of the county is in improved farm land. This represents a small decrease since 1900, at which time over 97 percent of the land was improved and in farms.

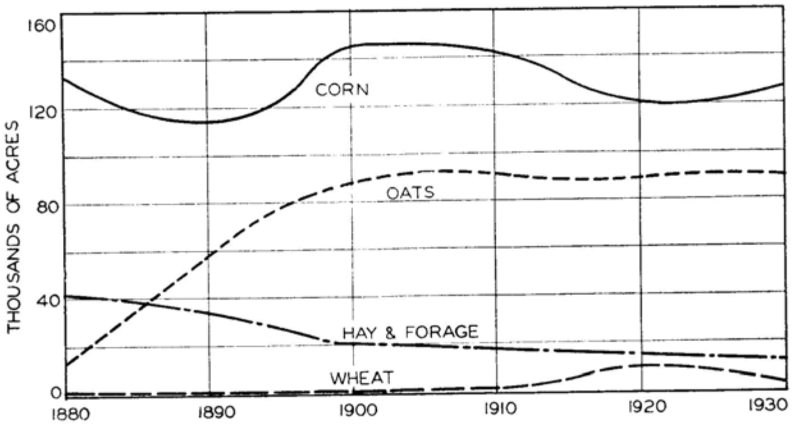

FIG. 2.—ACREAGE OF PRINCIPAL FIELD CROPS IN FORD COUNTY

The diagram shows the relative acreage devoted to the production of corn, oats, wheat, and hay and forage at ten-year intervals since 1880. (Figures from U. S. Census.)

The principal crops grown in Ford county are those common to the corn-belt region. The trend in the acreage of corn, oats, wheat and hay from 1880 to 1930 is shown in Fig. 2. It is interesting to note the small acreage of wheat thruout the entire period, the declining acreage of hay, the rapid increase in oats acreage between 1880 and 1900, and the consistently high acreage of corn. Table 1 shows the average acreage and average yield per acre of corn, oats, wheat, and tame hay in Ford county for the seven-year period 1924-1930. The state acre-yield for the same period is included for comparison. Soybeans are becoming important in Ford county, 29,000 acres having been planted to this crop in 1939.

Fruit growing is of little importance in this county. Small fruits reached a maximum of 52 acres in 1900; orchard fruits reach a maximum of 79,000 trees

TABLE 1.—AVERAGE ANNUAL ACREAGE AND YIELD OF PRINCIPAL FIELD CROPS PRODUCED IN FORD COUNTY, ILLINOIS, 1924-1930[1]

	Acreage, Ford county	Yield per acre	
		Ford county	State
Corn	131 600	39.1 bu.	34.1 bu.
Oats	94 180	30.8 bu.	32.3 bu.
Wheat	3 029	18.8 bu.	16.0 bu.
Tame hay	16 386	1.4 tons	1.32 tons

[1] These figures are compiled from Illinois Crop and Livestock Statistics, issued cooperatively by the U. S. Department of Agriculture and the Illinois Department of Agriculture.

about the same time and have decreased rapidly since then. Sweet-corn production is of some importance, 4,613 acres having been reported in 1935.

The number of horses and mules, dairy cows, and all other cattle in Ford county from the time of its organization in 1859 to 1930 is shown in Fig. 3. A sharp decline in the number of horses and mules since 1920 and a considerable decrease in dairy cows and other cattle is to be noted. The number of hogs has remained fairly constant during the last twenty years, ranging between 20,000 and 30,000. Poultry raising is important in Ford county, the number of chickens over three months old ranging well above 150,000 during the last forty years, except in 1900, when the number fell to 137,000. The number of sheep has fluctuated between 2,000 and 6,000 since 1870.

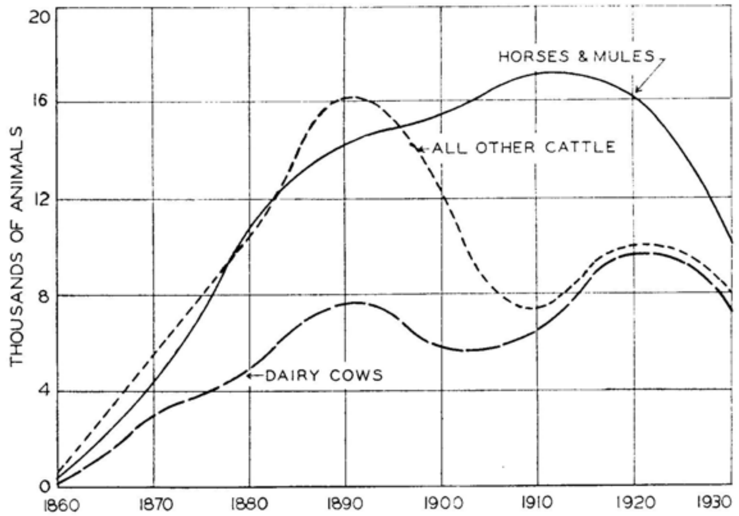

FIG. 3.—PRODUCTION IN THE PRINCIPAL CLASSES OF LIVESTOCK IN FORD COUNTY

The diagram shows the relative numbers of horses and mules, dairy cows, and all other cattle at ten-year intervals since 1860. (Figures from U. S. Census.)

Climate

The climate of Ford county is typical of that prevailing in north-central United States. It is characterized by a wide range between the extreme temperatures of winter and summer and by an abundant rainfall. The highest summer temperature recorded at the Pontiac weather station was 106° in July, 1930; the lowest winter temperature was 24° below zero in January, 1927. The average annual rainfall for the 13-year period 1918 to 1930 was 31.73 inches and the average annual snowfall 29.7 inches. The driest year was 1925 with a rainfall of 21.67 inches; the wettest, 1927 with a rainfall of 47.43 inches.

The average date of the last killing frost in the spring is April 26; the earliest in the fall is October 14. The latest killing frost recorded occurred May 25, 1925, and the earliest September 20, 1918. The average length of the growing season for this 13-year period was 172 days. The shortest growing season was 138 days in 1925; the longest, 205 days in 1929.

The average monthly rainfall during the growing season apparently indicates good distribution, and an analysis of the rainfall figures would bear out this general conclusion. Average rainfall figures, however, are misleading in that departures from the average and length of rainless periods, if less than a month in duration, are not shown. Moreover the rate of precipitation, rate of evaporation, character of the crop and character of the soil with reference to its absorptive and retentive capacity for moisture are all important factors influencing moisture conditions for plant growth. No records are available showing the rate of precipitation or rate of evaporation. The records show that during the thirteen years from 1918 to 1930 there were six years in which three or more rainless periods 11 days or more in length occurred during the growing season. Rainless periods of this length are not harmful, except on a few soils, unless they are preceded by a condition of moisture deficiency. During this same period, 1918 to 1930, there were four rainless periods 21 days or more in length during the growing season. Rainless periods of this length are likely to be harmful, and they may be expected about one year in four in this region.

The soils under the type names Clarence and Elliott, particularly the former, do not readily absorb moisture in large amounts and are therefore sensitive to both wet and dry periods. However, the comparatively good distribution of rainfall during the growing season provides a well-balanced moisture supply during most years.

Physiography and Drainage

Ford county is in a region of low relief. The difference in elevation between Piper City, which lies within the "Big Swamp" area, and Sibley, which is located on the Cropsey moraine, is 137 feet. The extreme northern end of the county at Cabery on the Marseilles moraine is 74 feet lower than Elliott near the southern boundary of the county on the Bloomington moraine.

Two morainic systems cross Ford county, the Bloomington and the Marseilles. The Bloomington system crosses the southern part of the county and is made up of three morainic ridges, the Chatsworth, the Cropsey, and the Bloomington. The extreme northern end of the county is crossed by the Marseilles moraine. With the exception of that portion of the Bloomington moraine west of Gibson City, none of these ridges are prominent features of the landscape.

The low-lying former swamp areas have been thoroly drained by the construction of dredge ditches, as shown on the soil map. The drainage of the south-western part of the county finds its way into Illinois river thru Drummer creek and Sangamon river. The northern part drains into Illinois river thru North Vermilion, or Illinois Vermilion, river and Mazon creek. Much of the southern part of the county drains into Wabash river thru the East and West Branches of Middle Fork creek and South Vermilion or Wabash Vermilion river.

FORMATION OF FORD COUNTY SOILS

Origin of Soil Material

The bed rock in Ford county lies beneath a covering of glacial till which ranges from about 150 to over 200 feet in thickness. This thick mantle of till was deposited by immense ice sheets that pushed southward from the far north during the Glacial period.

During this Glacial period snow and ice accumulated in regions to the north in vast amounts until the pressure was so great that masses pushed outward from these centers. The ice advanced chiefly southward, aided by further accumulations of snow and ice at its margin, until it reached a region where the climate was warm enough to melt the ice as rapidly as it advanced. In moving across the country from the far north, the ice gathered up all sorts and sizes of materials, including clay, sand, gravel, boulders, and even immense masses of rock. Some of these materials were carried hundreds of miles and rubbed against surface rocks and against each other until largely ground into powder. The great bulk of material carried, however, was derived from the old bed-rock surface and deposited perhaps within fifty miles or less of its origin. When the glacier reached the limit of its advance, the rock debris carried by it accumulated along its front in a broad undulating ridge or moraine. With rapid melting the glacier receded, and the material was deposited somewhat irregularly over the land surface. The advance and retreat of an ice sheet were not regular, uninterrupted movements; oscillations took place frequently and the action was complex in character. Each advance and retreat leveled off ridges and hills and filled in valleys. The mixture of materials deposited by the glacier is known as boulder clay, or glacial drift.

There were at least four great periods during which ice sheets moved down from the north. Some periods included two or more distinct movements, each of which covered a part of North America, altho the same parts were not necessarily covered during each advance. The movements of these individual ice sheets were separated by long periods of time during which the climate was similar to that now existing and the country was clothed with vegetation. At least two of these glaciers, the Illinoian and the Wisconsin, covered Ford county. The deposit left by the Illinoian is buried under 50 to 100 feet of the more recent deposits. The present soils of Ford county have been formed from the material left by the Wisconsin together with wind-blown material and, in some regions, water-deposited outwash from the retreating ice front.

The character of the glacial drift deposits left by the last ice sheet varies and this variation, particularly with reference to permeability to water, has been a very important factor in influencing the character of the soils formed. The deposit west of Gibson City is relatively permeable and is composed of a heterogeneous mixture of boulders, pebbles, sand grains, and particles of finer texture. To the east and north of this region, except in the old swamp areas, the drift varies from very slow permeability to medium permeability. Very slow permeability is associated with scarcity of granitic pebbles and relative abundance of shale fragments.

Wind-blown material, designated as loess, is relatively unimportant in Ford county. There doubtless was once a thin coating of this material over the entire county, but it was so thin that it has become mixed with other materials and cannot be identified as loess.

Outwash is important in the region south of Gibson City along West Branch creek and Middle Fork creek and in what is known as the "Big Swamp" north of Piper City.

Soil Development

As soon as the soil material, as outlined above, was deposited, the soil-forming processes became active and began to change this material into soil. These processes acted somewhat differently in different locations, because of differences in slope, in character of the original material, in vegetation, and in certain other factors. As time went on the products that were formed, which we call soils, began to take on differences. With the continued action of weathering processes, these differences became more and more pronounced until finally soils with distinctly different characteristics were evolved; these we call soil types. During the early stages in the life history of soil types their distinguishing features are not clearly developed and they are said to be young. In this respect their evolution is similar to that of a living being. The soils of Ford county are in various stages of the youthful period and, therefore, the influence of the parent material on their character is still strong. It is for this reason that the character of the glacial drift deposits in Ford county is of more importance from the standpoint of soils than would be the case were the region geologically older.

The material composing the morainal ridge area west of Gibson City was originally highly calcareous but its permeability to water permitted the relatively rapid action of solution, leaching, oxidation, and the other soil-forming processes and, as a consequence, the soils developed there are now in the later stages of youth. To the east of Gibson City the glacial drift, as mentioned above, is less permeable and this condition has retarded the action of the weathering forces, with the result that the soil is shallower and the relatively impermeable and slightly weathered drift is near enough to the surface to be harmful. Still farther to the east in the region of Clarence and to the north in the general region of Roberts and also of Kempton, the glacial drift is very impervious and the development of soil on it has, for this reason, been greatly retarded. This highly impervious drift functions as an impervious subsoil tho its impermeability is not the result of the action of the soil-developing forces, as is the impermeability of the "tight clay" subsoil found in some regions of Illinois.

The soils in the low-lying and swamp areas differ radically from those on the more rolling uplands because the original or parent material was different and the action of the weathering forces has been different. The soil material in these regions accumulated rapidly during the close of the Glacial period. This accumulation has continued, tho at a decreased rate, thru the centuries since the final retreat of the glacial ice and it is even now taking place. These areas, up to very recently, were either under water a considerable portion of the year or at least had a high water table. Under these conditions slough or swamp grass prevailed and numerous fresh-water, shell-bearing animals lived. The remains of these animals in the form of shell fragments or even unbroken shells are abundant in some of the soils, usually in association with concretions of limestone. All of the soils occurring in these areas that were formerly swampy are young and the features associated with mature soils are but faintly developed.

THE SOIL MAP

Basis of Soil Classification

In the soil survey the "type" is the unit of classification. Each soil type has definite characteristics upon which its separation from other types is based. These characteristics are inherent in the strata, zones, or "horizons" which constitute the soil profile in all mature soils. Among them may be mentioned color, structure, and texture, and physical and chemical composition. Topography and kind and character of vegetation are easily observable features of the landscape which are very useful indicators of soil character. A knowledge of the geological

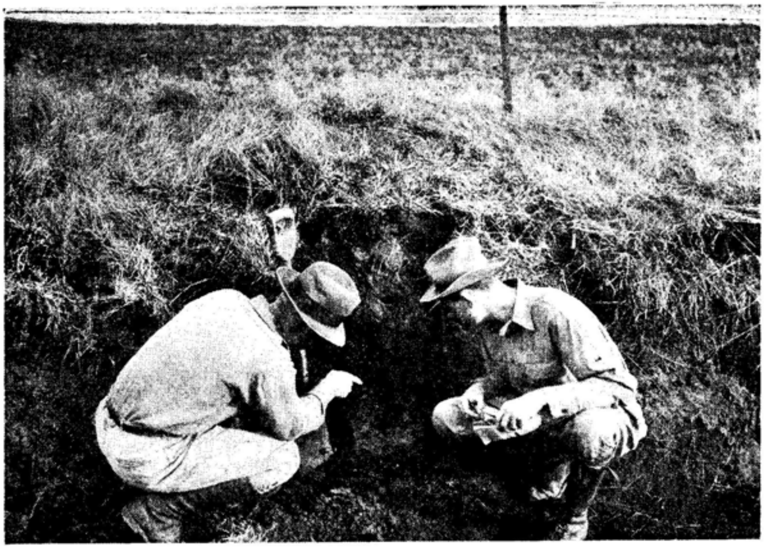

Fig. 4.—Studying the Soil Profile

One of the very pronounced characteristics observed in most soils is that they are composed of more or less distinct layers, or strata, often spoken of in soil literature as "horizons." The vertical section of the soil showing the arrangement of these horizons from the surface down is called the "soil profile."

origin and formation of the soil material of the region being mapped often makes possible an understanding of the soil conditions which occur.

Not infrequently, as in Ford county, areas are encountered in which type characters are not distinctly developed or in which they show considerable variation. When these variations are considered to have sufficient significance and where the areas involved are sufficiently large, type separations are made. Because of the almost infinite variability occurring in soils, one of the exacting tasks of the soil surveyor is to determine the degree of variation allowable for any given type.

Naming of Soil Types

The "place-name" system of nomenclature, such as that used in other states and countries, is used in this report. This system is simple and convenient and has the very essential merit of indefinite expansion. To assist in designating soil types, a number is assigned to each type. These numbers are not only a convenience in referring to the respective types but they are especially useful in designating very small areas on the map and as a check in reading the map colors.

TABLE 2.—SOIL TYPES OF FORD COUNTY, ILLINOIS

Type No.	Type name	Area in square miles	Area in acres	Percent of total area
146	Elliott silt loam	180.73	115 667	37.68
147	Clarence silt loam	82.88	53 043	17.28
152	Drummer clay loam	135.10	86 464	28.17
145	Saybrook silt loam	15.01	9 607	3.13
148	Proctor silt loam	22.48	14 387	4.69
149	Brenton silt loam	15.40	9 856	3.21
151	Ridgeville fine sandy loam	8.11	1 590	1.69
153	Pella clay loam	5.47	3 501	1.14
21	Lindley silt loam	4.38	2 803	.91
18	Clinton silt loam	1.87	1 197	.38
67	Harpster clay loam	2.51	1 606	.52
150	Onarga sandy loam	.70	448	.15
73	Wabash loam	4.35	2 784	.91
103	Muck	.67	429	.14
	Total	479.66	306 982	100.00

Table 2 gives the list of the soil types as mapped in Ford county, the area of each in square miles as well as in acres, and also the percentage that each type constitutes of the total area of the county. The accompanying soil map, shown in two sections, gives the location and boundary of each soil type and indicates the position of streams, roads, railroads, and towns.

DESCRIPTION OF SOIL TYPES

Following is a brief description of the outstanding characteristics of the individual soil types as mapped in Ford county. Along with the descriptions of the soils are given general recommendations on the use, care, and management of each type.

It is impossible to outline a soil-improvement and management program complete in all particulars for a given field or farm without knowing what soil types occur, what cropping and management practices have been followed in the past, and what type of farming it is desired to follow in the future. It is the purpose of this report to furnish the necessary information about soil types and to indicate the main factors that should be considered in developing a soil-management program for a type. The necessity of recognizing the type as the basis for working out a soil-improvement program is illustrated by the different drainage treatments required by two types to be described later, Clarence silt loam and Saybrook silt loam. Both these types need underdrainage, but Clarence will not underdrain satisfactorily while Saybrook will. Erosion is a problem on both types but it is much more easily controlled on Saybrook than on Clarence. Pella clay loam and Drummer clay loam are two types that are similar in many respects, but much of Pella needs potash treatment to produce good corn yields while Drummer does not.

The type descriptions which follow are intended to point out the characteristics of each type in such fashion that the reader can get a clear idea of each type without reading a large mass of material.

The reader will find frequent reference in the recommendations for management of Ford county soils to two publications of this Station and one of the U. S. Department of Agriculture.

Illinois Circular 421, "Testing Soil for Available Phosphorus."
Illinois Circular 346, "Test Your Soil for Acidity."
U.S.D.A. Farmer's Bulletin 1795, "Conserving Corn Belt Soils."

It would be well for one who expects to proceed according to these recommendations to supply himself with copies of these publications, which can be obtained free of charge by addressing the Agricultural Experiment Station, University of Illinois, Urbana, and the U. S. Department of Agriculture, Washington, D.C.

Elliott silt loam (146)

Elliott silt loam occupies about 180 square miles in Ford county, or nearly 38 percent of the total area of the county. It occurs on gently undulating to gently rolling topography, and was formed from glacial till of middle Wisconsin age and a thin blanket of wind-deposited material known as loess. While the loess cannot now be identified with certainty (it is thin, probably never more than a foot thick or else absent altogether), it is thought to have had a favorable influence on the surface few inches of soil. Surface drainage is good but underdrainage is poor because of the impervious nature of the substrata. Erosion is a factor to be considered, tho it is not difficult to control except on the more-abrupt slopes. This type was originally covered by a prairie-grass vegetation.

The surface soil is a friable finely granular brown silt loam varying from about 6 to 8 inches in thickness. This horizon is thought to be developed very largely from material deposited by the wind on top of the glacial till. The subsurface is a little heavier than the surface, is slightly yellowish brown, and the granules, tho not distinctly developed, are larger and less rounded than in the surface. This horizon is also friable, tho not to the same degree as is the surface. The subsoil, usually beginning at about 15 inches in depth and extending to about 30 inches, is pale brownish or drabbish yellow; and the surfaces of the large somewhat angular blocks or aggregates have a vitreous or waxy appearance. This horizon is compact and medium-plastic, and tile placed in it do not draw very satisfactorily. The material beneath the true subsoil is usually calcareous and is not so compact and plastic as is the subsoil above it. It ordinarily contains some granitic pebbles and also decomposing shale fragments.

Use and Management Suggestions.—The results from the Sibley experiment field, which was located on this soil, indicate that nitrogen deficiency is the primary limiting factor for the grain crops. The average yield of corn and the small grains is satisfactorily high when good soil-management methods are practiced; however, crops growing on this soil are more sensitive to unfavorable climatic conditions than those on a more permeable soil. The yields secured on the Sibley experiment field indicate that the corn crop will be relatively poor about two years out of nine and the oats crop one year out of nine. Drainage is something of a problem, altho not a serious one because excess rainfall can be drained off with but little damage from erosion if proper precautions are taken.

An efficient soil-management program for Elliott silt loam must include erosion control, chiefly sheet erosion; correction of soil acidity; increase of nitrogen and organic-matter content of the soil; and use of phosphatic fertilizers.

Erosion can be satisfactorily controlled on most of this soil under general farming by using good farming methods, including the soil treatment necessary to get good crop growth, contour farming, grass waterways, and crop residues to decrease the rate of flow of run-off water. Fall plowing should not be practiced on slopes with a gradient exceeding about 2 percent even tho the properties of this soil make it desirable to fall-plow.

The acidity of this soil type is not high, but some limestone must be applied if sweet clover is to be grown or satisfactory yields of red clover obtained. Each field should be tested before applying limestone, as explained in Illinois Circular 346, "Test Your Soil for Acidity." A systematic test for acidity, as outlined in the circular, is essential for economy in the use of limestone and certainty in securing stands of acid-sensitive legumes. After the proper limestone application has been made, then for one or two rotations particular attention should be given to returning as much nitrogenous organic material as possible to the soil, for most of the area occupied by this soil is low in both nitrogen and organic matter. The results from the Sibley field, while somewhat variable, indicate clearly that manure will give reasonably good crop increases in a corn, oats, legume rotation. This fact suggests the advisability of including livestock in the farm plans when it is possible to do so.

As soon as the nitrogen deficiency has been taken care of, the soil should be tested for available phosphorus, as explained in Illinois Circular 421, "Testing Soil for Available Phosphorus." This soil, if found deficient in available phosphorus, should respond profitably to its use, particularly if wheat is grown.

Manure should help very materially in meeting a phosphorus deficiency, where such a deficiency exists. It should be borne in mind, however, that since manure is relatively low in phosphorus, phosphate will probably need to be added to the manure before spreading it or applied directly to the land. If a corn, oats, clover rotation is used, the manure and phosphate should be applied for the corn crop. There is no experimental evidence that potash fertilizers will give a profitable response on this soil.

Studies made since the completion of the soil map of Ford county in 1929 show that Elliott silt loam as mapped in this county would at the present time be separated into three types: (a) Elliott silt loam, (b) Elliott silt loam, rolling phase, and (c) Varna silt loam. These separations are all-important from the agricultural use point of view.

(a) Elliott silt loam as now mapped occupies a slope range of 1 to 3 percent. It may be farmed satisfactorily under a three-year rotation if a good growth of clover is plowed down for green manure in each rotation period. It may be fall-plowed occasionally without showing serious erosion loss, but the practice should not be continued indefinitely, especially on slopes greater than 2 percent.

(b) Elliott silt loam, rolling phase, occupies a slope range of 3 to 7 percent. It may be regularly cropped if a rotation is adopted which includes not more than one cultivated crop in four or five years. If more intensively cultivated, sheet erosion soon removes the surface layers, exposing the unproductive subsoil and glacial till. This soil should never be fall-plowed.

(c) Varna silt loam occupies a slope range of 7 to 15 percent. Cultivated crops should not be grown regularly, and all areas should, if possible, remain in permanent pasture or meadow. This soil should be plowed very infrequently and then only in the spring. A more complete description of each of these soils is available in the form of "type description sheets," which will be sent to those requesting them.

Elliott silt loam mixed (146)

(Includes small areas of Clarence silt loam)

The areas of Elliott silt loam shown on the Ford county soil map with cross-hatching represent a gradation between Elliott silt loam and Clarence silt loam and an intermixing of these two types. The permeability of the soil profile in these areas to water, therefore its drainability, depends on whether the particular spot consists of Elliott silt loam, Clarence silt loam, or is a gradation between these two types. Also the tendency of the soil to erode and its agricultural value are more variable within these mixed areas than in areas where the soil types are unmixed and clearly defined.

Clarence silt loam (147)

Clarence silt loam occupies about 83 square miles in Ford county, or a little over 17 percent of the total area of the county. It is found on gently undulating to rolling topography and was formed from a compact, highly colloidal glacial till and a thin blanket of loess. The material from which this soil has been developed, excepting the immediate surface material, differs from the parent material of the other till-derived types in the county in being finer textured, more compact and impervious, and freer from pebbles. These characteristics of the parent glacial till material were and still are important factors in determining the properties of this soil. Erosion is more harmful on this type than on Elliott silt loam and is more difficult to control because of the slow permeability to water. This is a grass-land soil, but the conditions under which it has developed were not favorable for the accumulation of organic matter in such large amounts as in many other grass-land soils in Illinois.

The surface horizon is a brown silt loam with a grayish cast. It does not have as well-developed granules as does the surface horizon of Elliott silt loam and tends to be somewhat sticky when wet. The subsurface, beginning at 4 to 8 inches below the surface, ordinarily varies from about 2 to 6 or 7 inches in thickness but may be entirely absent on erosion slopes. It is grayish brown or pale yellowish brown in color and is somewhat heavier than is the surface horizon. The structure particles are less rounded and are better developed than in the surface horizon, altho, because of the youthfulness of the soil, they are not so distinctly developed as in some types. The subsoil is chocolate brown in the upper portion and drabbish gray in the lower, with spots and splotches of rusty brown. When moist, the fresh surfaces have a vitreous or waxy appearance because of the colloidal coating. This horizon is sticky and plastic when wet and very hard when dry. It varies from about 6 to 16 or 18 inches in thickness, depending on the rate at which the surface material is removed by erosion. Few granitic pebbles occur but decomposing shale fragments are common. The material beneath the subsoil is highly calcareous. It is gray with light rusty brown splotches occurring thruout the gray, evidencing the penetration of weathering agencies. It is very slowly pervious to water and therefore resists weathering, and this fact in part explains the shallowness of this soil. Pebbles are not abundant, the drift being constituted mainly of material ground very fine as it was being transported and deposited by the ice sheet during the Glacial period.

Use and Management Suggestions.—Clarence silt loam is recognized as a relatively poor soil thruout the region where it occurs. Its location in the midst of productive corn-belt soils, where such a soil would not be expected to occur, delayed its general recognition as a separate type. In so far as chemical composition is concerned, it is not deficient, but its physical properties limit its value. The loess blanket is too thin in this region to have a very strong ameliorating influence on unfavorable properties imparted by the fine-textured strongly compacted glacial till. Tile do not draw satisfactorily in this soil, and the surface run-off carries with it a load of thin wind-deposited surface material. This slow removal has progressed so far that this valuable soil-forming material is entirely gone from many slopes.

There appears to be no possibility of ever overcoming the basic handicap imposed on this soil by the unfavorable soil material laid down centuries ago by the ice sheet. This prospect, however, need not preclude the possibility of raising the present productivity level of most areas of the type. Erosion has taken heavy toll on this soil. The loss of a few inches of the surface material is serious and the harm done is permanent; however, if 10 inches or more of material above the calcareous till remains, there are distinct possibilities of improvement, and every effort should be made to reduce further erosion losses to a minimum and thus prevent further areas of this soil from becoming nontillable because of erosion. Present information indicates that this must be accomplished largely by providing vegetable protection against erosion during as much of the time as possible and by proper land use. Some areas should be kept in permanent meadow or pasture, while others may be safely tilled if proper soil-management methods are used.

This soil should be tested for acidity, as explained in Circular 346, and then enough lime applied to permit the growing of sweet clover. The sweet clover will help to correct the nitrogen and organic-matter deficiency of this soil. Since sweet clover will do well except where most or all of the surface soil has been lost, it is suggested that consideration be given to using this crop for pasture and for seed production. The better areas should be tested for available phosphorus, as explained in Circular 421, and if a deficiency is found, one of the phosphate fertilizers should be tried on a small acreage.

The utilization of this soil presents problems which should be given careful study. The continued production of grain may not be the best way to use this land. Its physical limitations are reflected in unsatisfactory yields, and no method of overcoming these limitations is known. The fact that this soil will grow good sweet clover following a light application of limestone leads to the suggestion that serious consideration be given to the possibility of establishing larger farm units, so that a larger proportion of the land may be kept in pasture and livestock production made a prominent part of the farm business. Areas of good soil occur thruout the region where Clarence soils predominate so that, with large farm units, advantage could be taken of this fact, the portions of the farm with good soil being used for grain crops and the poorer portions for pasture.

Drummer clay loam (152)

Drummer clay loam occupies about 135 square miles in Ford county, or a little over 28 percent of the total area of the county. It is found along drainage channels and nearly level or basin-like topography in the old swamp areas of the county. The parent material of this soil is largely outwash, together with some wind-blown material. It is a productive, youthful soil, showing very little development of the various horizons composing the profile, and usually does not require the application of limestone to grow sweet clover.

The surface horizon is a drabbish-black or black clay loam or silty clay loam. It is friable when well handled and works well for a heavy soil unless it is allowed to get into poor physical condition. This horizon varies from about 6 to 10 inches in thickness. The subsurface is drabbish black and somewhat more plastic than is the surface. It also varies in thickness from about 6 to 8 inches. The subsoil is gray with spots and splotches of pale yellow, bright yellow, and rusty brown. It is medium-compact and rather plastic but it underdrains satisfactorily. Immediately beneath the subsoil at a depth varying from about 35 to 45 inches a mixed silty, sandy, and gravelly material is found which is usually calcareous.

Use and Management Suggestions.—Drummer clay loam is a productive, general farming soil. It is doubtful whether any fertilizer treatment would cause sufficient increases in crop yields to pay the cost of the fertilizer. Some areas of this type, which have been farmed hard, may need a light application of limestone. It is suggested that if there is any indication of a need for limestone, acidity tests be made, as explained in Circular 346. Attention should be given to returning organic matter to the soil at regular intervals in order to maintain its good physical condition. The construction of dredge ditches has made it possible to drain this type effectively thru the laying of tile drains, and most of it is now so drained.

Studies made since the completion of the original Ford county soil map in 1929 have shown that some areas of this type are less readily permeable to water than is normal for the type. In more recent mapping work such areas are shown as Elliott clay loam to silty clay loam or as Clarence clay loam to silty clay loam. These two latter types actually occupy a considerable portion of the area shown as Drummer clay loam on the Ford county map where Drummer is shown in association with them.

Saybrook silt loam (145)

Saybrook silt loam is a relatively unimportant type in Ford county, occupying only 15 square miles, or a little over 3 percent of the total area of the county. It is confined to a district northwest of Gibson City. Its topography is gently rolling, and both surface drainage and underdrainage are good. It is developed from a calcareous, pebbly, relatively permeable glacial drift with the surface horizon influenced by the thin wind-blown deposit common to the region. It is important to note that the glacial till in the Saybrook area is very different in character from that anywhere else in the county. The important difference from the standpoint of soils is that it is permeable to water and consequently the soil developed on it is different from soils developed on the less-permeable drifts already discussed. Saybrook is a grass-land soil and therefore is dark colored.

The surface horizon is brown or light brown depending on the slope. It is a silt loam, friable and finely granular, and it usually contains a few pebbles. It varies in depth from 6 to 10 inches depending on the rate at which surface material has been lost by sheet erosion. The subsurface, extending to a depth of about 14 to 20 inches, is a light-brown or yellowish-brown friable silt loam with small poorly developed granules and it contains some pebbles. The subsoil is yellowish-brown silty clay loam with a distinctly reddish cast on the more pronounced slopes. The freshly broken faces are grayish or drabbish brown. The structure of this horizon is not strongly developed but the material readily breaks up into somewhat angular aggregates varying in size from about ¼ to ½ inch. It is medium-plastic and compact, and pebbles are abundant in this horizon. At a depth of about 28 to 35 inches a thin noncalcareous horizon usually occurs which differs from the true subsoil horizon above it in being less compact and plastic and in having a less well-defined structure. This horizon may not always be distinguishable, and it rarely if ever exceeds 5 or 6 inches in thickness. Beneath this thin horizon the material is highly calcareous and contains numerous pebbles, including a few shale fragments.

Use and Management Suggestions.—Saybrook silt loam is a good general farming soil, has good surface drainage and underdrainage, and needs only good farming and proper treatment to produce consistently satisfactory crops. This is one of the good corn-belt soils that is being injured by erosion. The apparent injury is so slow that little attention is paid to it by most farmers, and yet it is slowly but surely reducing the productive value of this soil. Much of the injury from erosion can be avoided by so planning the cropping system that a vegetative cover will be on the land most of the time. The more pronounced slopes need additional protection, and this may be provided easily by constructing terraces, as explained in U.S.D.A. Farmer's Bulletin 1795.

The need for a more adequate supply of nitrogen and organic matter is becoming more and more apparent on this soil. The first step in meeting this need should be to test each field in detail for acidity, so that the proper amount of limestone can be applied for growing sweet clover. The limestone requirement of this soil is not high but varies somewhat, depending on several factors; a detailed test of each field is therefore needed before limestone is applied, as explained in Circular 346.

The Bloomington experiment field is located, in part, on soil which is similar to Saybrook silt loam. The results from this field indicate that phosphate fertilizers are effective in increasing yields well beyond the cost of the fertilizer. Since this is true, detailed tests for available phosphorus, as explained in Circular 421, should be made as soon as the nitrogen and organic-matter deficiency is taken care of, and a phosphate fertilizer applied as the test indicates. The kind of phosphate to use on this soil appears not to be a matter of importance, for rock phosphate, superphosphate, and bone meal all give equally good results. Another lesson from the Bloomington field is that potash fertilizer is not needed on this soil.

Saybrook silt loam is well adapted to alfalfa following the application of limestone as indicated by test. A phosphate fertilizer should also be applied when this crop is seeded.

The main area of this type in Ford county, lying west of Gibson City and extending west into McLean county, is well suited to livestock farming. Most farms in this area have one or more slopes which erode, and these slopes may be used to best advantage for alfalfa or pasture. Most farms also have some Drummer clay loam, a heavy soil, which is primarily a corn soil but also produces good crops of small grains. The soils of this area are also well suited to grain farming; but if Saybrook silt loam, when used for this purpose, is to compete on a par with other potentially more productive soils, more attention must be given to erosion control and to soil treatment than has been given in the past.

Towards the southern part of the area in which Saybrook soil is shown to occur, there are many slopes from which a large amount of soil material has been removed by erosion. These slopes would now be shown on the soil map as La Rose silt loam, which may be thought of as a rolling eroded phase of Saybrook silt loam. A few of the slopes in this area have been eroded to such extent that they would now be shown as Hennepin gravelly loam. All La Rose and Hennepin slopes should be put into permanent pasture or meadow, as they cannot be tilled without further rapid deterioration.

Proctor silt loam (148)

Proctor silt loam occupies a total area of about 22 square miles in Ford county, or a little over 4½ percent of the area of the county. It is found only in the old swamp regions where conditions during or shortly after the Glacial period were right for the accumulation of glacial outwash material. It has a gently sloping topography, and both surface drainage and underdrainage are good. It is thought that somewhat more wind-blown material enters into the composition of the upper horizons of this soil than is the case with the strictly upland soils in this region. The lower horizons are often very clearly stratified, indicating outwash origin, and this condition insures good underdrainage provided there is an outlet sufficiently low to prevent the formation of a high water table.

The surface soil is usually 7 or 8 inches deep and is a brown or, less commonly, a light-brown friable finely granular silt loam. The subsurface is yellowish brown except where a high water table was present prior to the construction of dredge ditches, in which case it is grayish brown. This horizon is friable and granular tho the granules are not well developed, indicating that this soil is youthful in its stage of development. The subsoil is usually encountered at about 16 to 18 inches below the surface and varies from 14 to 20 inches in thickness. It is a brownish-yellow silty clay loam with little structural development and shows but little compaction or plasticity. In areas where the drainage has been poor in the past this subsoil horizon is distinctly gray or drabbish gray. Beneath the subsoil the material varies, depending on the character of the outwash, but is ordinarily a silty, sandy gravelly material often clearly stratified. It shows no structural development and is noncalcareous to a depth of at least 45 inches below the surface.

Use and Management Suggestions.—Proctor silt loam is a productive soil tho not so productive as the next type to be discussed, Brenton silt loam, which is found in the same vicinity. It is medium-acid in reaction even in the subsoil, so that in applying limestone there is no calcareous subsoil to meet, even in part, the lime requirement of the surface. The first step therefore in improving the productive level of this soil, assuming that drainage is satisfactory, as it usually is, is to test each field in detail for degree of acidity, as explained in Circular 346, in order to make the growing of sweet clover possible and to improve the growth of the less acid-sensitive legumes. As soon as this program, which provides for meeting the nitrogen and organic-matter deficiency of this soil, is under way, the available phosphorus test, as described in Circular 421, should be used to determine whether a phosphatic fertilizer should be applied. It is unlikely that potash will pay on this soil, at least until the treatment suggested above has been under way for several rotations.

This soil type occurs in relatively small areas in association with heavier, naturally more poorly drained but more productive soils. If livestock is kept on farms where a portion of the farm is Proctor silt loam with the rest occupied by the associated heavier types, the Proctor will normally be used more than the others for pasture and thus receive more than its proportion of the manure produced. During wet years Proctor has the advantage of draining better than the associated types, and this is a particular advantage in livestock farming. This soil is adapted to all the crops common to the region and, if so farmed as to provide an adequate nitrogen and organic-matter supply, will produce consistently good crops.

Brenton silt loam (149)

Brenton silt loam occupies a total area of about 15 square miles in Ford county, or about 3¼ percent of the area of the county. It occurs only in the old swamp regions and is commonly associated with Drummer clay loam previously described. It is the darkest colored silt loam as well as the most productive silt loam in the county. It is of mixed alluvial and wind origin and occurs on nearly level to gently undulating topography. The lower horizons are often clearly stratified, indicating alluvial, or water-lain, origin. Surface drainage is satisfactory on the undulating portions of the type but poor on the nearly level portions. Underdrainage is good provided a satisfactory outlet is available, and this is usually the case because of the presence of dredge ditches thruout the region.

The surface soil is 8 to 10 inches thick and is a dark-brown friable silt loam. The slightly higher portions of the type are a little lighter colored, while the lowest spots are nearly black. The subsurface varies in color in a manner similar to the variation in the surface horizon. It is brown on the higher places and drabbish brown on the lower. It is silt loam in texture, friable and easily permeable to water and to plant roots. At a depth varying between 15 and 18 inches the color becomes brownish yellow on the higher areas and yellowish gray on the lower. This horizon is silty clay loam in texture and is the true, tho poorly developed, subsoil. The material beneath the subsoil beginning at a depth of about 28 or 30 inches is gray with bright yellow spots and splotches. It is usually a sandy silt loam and may be slightly calcareous. It may or may not be clearly stratified.

Use and Management Suggestions.—The productiveness of this soil since drainage has been established thru the construction of dredge ditches makes it a very desirable general farming soil. It is easy to work, is either nonacid or only very slightly acid, is well supplied with organic matter and nitrogen except on the lighter colored portions, and probably has sufficient phosphorus so that it would not respond profitably to phosphate fertilization. Tests for acidity and for available phosphate, however, should be made before steps are taken to correct conditions, as explained in Circulars 346 and 421. The good supply of organic matter, particularly in the lower-lying areas, may lead to the erroneous conclusion that no provision need be made for the return of crop residues or other organic materials. This soil, however, responds well to the addition of leguminous organic materials, and unless such additions are made, a high level of production cannot be maintained. It is well adapted to the grain crops and should continue to be used for this purpose, with special emphasis on corn.

Ridgeville fine sandy loam (151)

Ridgeville fine sandy loam is a minor type in Ford county, occupying only a little over 8 square miles, or less than 1¾ percent of the total area of the county. It is found only in the "Big Swamp" and occupies nearly level to gently undulating topography. Surface drainage is good except on the nearly level portions, and underdrainage is good thruout. This soil type is developed from outwash material which has been assorted and redeposited by the wind.

Because of its youthful stage, there is little or no distinguishable horizon development in this soil. The upper part of the profile is dark brown fine sandy loam. The color varies somewhat, being darker in the lower places and lighter on the higher. This dark-colored upper portion varies in thickness between about 8 and 12 inches and grades into a yellowish sandy loam on the gentle slopes and low knolls and a drabbish-yellow sandy clay loam in the low-lying places.

Use and Management Suggestions.—This soil is slightly to medium acid and should be tested as directed in Circular 346 before limestone is applied. The open nature of lower portions of the profile on the slopes and knolls makes it impracticable to build up much of a reserve of organic matter; frequent additions of such material are therefore advisable. Sweet clover does well on this soil following proper treatment, and alfalfa also does well. Before seeding alfalfa, however, the soil should be tested for available phosphorus as directed in Circular 421, and phosphate applied if the test indicates the need. It is wise to precede alfalfa with a crop of sweet clover. Following sweet clover or alfalfa, corn does well except probably on the slopes and knolls in years when there is too little rainfall during the growing season. Sweet corn does well on this soil but, for the best results, requires fertilization in addition to the return of leguminous organic matter. While this soil is not as productive as are the other soils found in the swamp regions, it will, if properly handled, produce consistently satisfactory crops and may be used to advantage for special crops such as sweet corn.

Pella clay loam (153)

Pella clay loam is a minor type in Ford county, occupying only about 5½ square miles, or a little over 1 percent of the total area of the county. It occurs chiefly in the "Big Swamp" in association with Ridgeville fine sandy loam. It occupies nearly level topography and drainage is poor, because of the small slope obtainable, for either surface drainage or tile drainage. This soil was developed from outwash and wind-blown material under swampy conditions. It is a very youthful soil, showing but little horizon development, and is heavily charged with shells and lime concretions in the subsoil.

The surface soil is a black clay loam or silty clay loam varying from about 6 to 15 inches in depth. The subsurface, when present, is drabbish black in color and a silty clay to clay loam in texture. It is somewhat plastic tho not strongly so. When this horizon is absent the dark-colored surface horizon rests directly on a drab or dark-gray medium-plastic clay loam which varies greatly in thickness, having a minimum thickness of about 20 inches and a maximum of about 50 inches. Pale-yellow and bright-yellow spots and splotches occur thruout the material containing shells and lime concretions. The brightness of the yellow spots and splotches seems to be determined by the readiness with which air has been able to penetrate. Underlying the concretion-bearing layer is found a heterogeneous, usually calcareous, mixture of the finer portions of the usual outwash material. This may vary considerably in texture but is commonly of a fine, silt-like nature, with few rocks or pebbles present.

Use and Management Suggestions.—Pella clay loam is not acid; in fact in places it needs potash to correct the unfavorable conditions arising from too high a concentration of soluble salts, often spoken of as an alkali condition. The greatest difficulty to overcome in farming this soil is to provide adequate drainage. The soil is permeable to water. Tile draw readily, but because of lack of adequate slope they require very careful leveling when being installed. Thus the two points of primary importance to be kept in mind in farming this soil are the prompt removal of excess water and the use of potash where the condition of the crops, particularly corn, indicates it is needed. Provision must be made for the addition of organic matter at regular intervals; otherwise a progressively poorer physical condition will result. This soil is adapted to general grain farming. Its naturally poor drainage shortens the time that it may be pastured without injury to the physical character of the soil.

Lindley silt loam (21)

Lindley silt loam is a minor type in Ford county, occupying less than 4½ square miles, or less than 1 percent of the total area of the county. Most of it is found along Middle Fork creek south of the Nickel Plate railroad. It is derived from glacial till under a timber vegetation and usually is not calcareous within 40 inches of the surface. The topography of this soil varies from nearly level to moderately sloping. Some of the slopes are too steep for ordinary cultivation without danger of excessive erosion, but these slopes are short and are not numerous. Draining is not difficult on this type, as it all underdrains well and much of it has good surface drainage.

The surface horizon is brownish gray with a yellowish cast. It is 6 to 8 inches in depth and is silt loam in texture and finely granular in structure. The subsurface is grayish yellow and is almost structureless. It has about the same texture as the surface horizon. The subsoil is a compact medium-plastic clay loam, gray in color, often with a yellowish cast. This horizon lies about 18 inches beneath the surface and extends to a depth of about 34 inches. Beneath this depth the less-weathered glacial till occurs. Pebbles occur thruout the profile, particularly in its lower portion.

Use and Management Suggestions.—Much of this type is so located that it may be used to advantage for pasture. If it is used for this purpose it should be tested for acidity as directed in Circular 346, and sufficient limestone should be applied to make the growing of sweet clover possible. Following this treatment and this use for a few years, it should produce two or possibly three good corn crops before being returned to pasture. Alfalfa may be grown successfully but the soil should, in addition to being limed, be tested for available phosphorus, and if found deficient, an application of one of the phosphates should be made. This soil does not rank with the best soils in the county in producing power but, if intelligently handled, it responds with satisfactory yields.

Clinton silt loam (18)

Clinton silt loam, as mapped in Ford county, is a minor type, occupying less than 2 square miles. This soil is developed under a timber vegetation from windblown material, or loess, of local origin. It is a light-colored soil of the same origin as Proctor silt loam, a dark-colored soil. The differences between these two soils is thought to be due entirely to differences in vegetation, the former being a timber soil, the latter a prairie-grass soil. In reality this soil is not true Clinton silt loam as found in some other locations, but its small area and similarity to Clinton seemed to justify correlating it with Clinton. The appearance of the upper horizons of the profile is very similar to corresponding horizons in the Lindley silt loam. It has better natural underdrainage than Lindley because the substratum, instead of being compact drift, is a mixture of sandy, silty, clayey outwash frequently clearly stratified.

The surface soil is brownish gray with a yellowish cast. It varies between 6 and 8 inches in thickness and is finely granular and friable. The subsurface is grayish yellow and shows very little structure. It has about the same texture as the surface soil. The subsoil is a slightly yellowish-gray silty clay loam, slightly compact and medium-plastic. At a depth of 35 to 40 inches the mixed sandy, silty, clayey outwash occurs.

Use and Management Suggestions.—Clinton silt loam is medium in acidity, low in nitrogen and organic matter, and probably deficient in available phosphorus. It should be tested for acidity before limestone is applied, and after the nitrogen and organic matter deficiency have been corrected it should be tested for available phosphorus. It is fairly good general farming soil but is not so good as its prairie-grass relative, Proctor silt loam.

Harpster clay loam (67)

Harpster clay loam is a minor type in Ford county occupying only 2½ square miles, or a little over one-half of 1 percent of the area of the county. It occurs

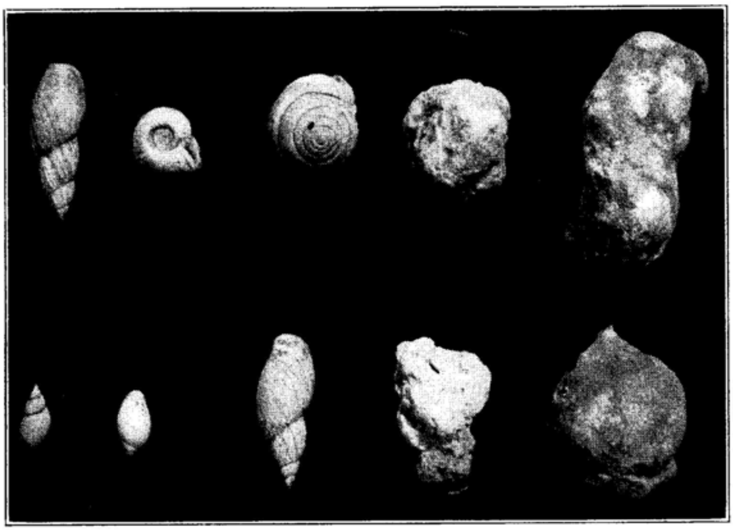

FIG. 5.—SHELLS AND LIME CONCRETIONS FOUND IN HARPSTER CLAY LOAM

The surface soil of Harpster clay loam is heavily charged with shells of various forms, while numerous lime concretions occur in the subsoil. Because of the abundance of such calcareous material, the application of limestone is unnecessary.

chiefly in the old swamp region south of Gibson City, and is found only in basin-like or very low areas. This soil has developed under conditions of very poor drainage. This fact explains the presence of numerous shells and lime concretions that occur thruout its profile. It is a young soil and shows little horizon development. It differs from Pella clay loam in having shells thruout the entire soil profile instead of in the substrata only, as is the case with Pella. Surface drainage, because of topographic position, is poor or entirely lacking. Subsurface drainage is satisfactory since the deepening of ditches has provided good outlets for tile.

The surface soil is about 7 or 8 inches thick and is a very dark-brown or black highly calcareous clay loam with a grey cast due to the numerous minute shell fragments present. The subsurface to a depth of about 14 inches is slightly lighter colored than the surface but is otherwise very similar. The material beneath the subsurface shows no well-defined soil characteristics such as are present in mature soils. It is a clay loam and is predominantly gray with pale yellow and brownish yellow spots, splotches, and streaks. It is highly calcareous and contains pebbles and numerous shells and lime concretions. At a depth below about 35 inches the material often is very sandy and gravelly.

Use and Management Suggestions.—Harpster clay loam is found, for the most part, only in very small areas and it is unusual for an entire field to be made up of this type. Spots of this soil occur which could not be shown on the map because of their small size, but they may be easily recognized. Because of the need of Harpster clay loam for potash, it becomes necessary, in fields where it occurs, to treat a portion or portions of the field differently from the rest of the area. The establishment of good drainage is of primary importance. If manure or straw is available, the use of a mineral potash fertilizer may be avoided except on the most strongly alkaline areas. It is questionable whether sweet clover should be grown on this soil, as it is likely to have a bad rather than a good effect on it. If this crop is grown, the likelihood of an injurious effect may be lessened if the crop is removed rather than plowed down.

Onarga sandy loam (150)

Onarga sandy loam occupies less than one square mile in Ford county. It occurs in a beach-like formation in association with Ridgeville fine sandy loam in the "Big Swamp" on undulating to gently rolling topography. The surface drainage of this soil type is good and the underdrainage is excessive.

The surface soil is 8 to 12 inches thick. It is a light brown sandy loam, deficient in organic matter and nitrogen. The material beneath the surface soil is grayish yellow and often coarse in texture. No horizons have developed beneath the surface layer because of the youth of this soil.

Use and Management Suggestions.—The coarse texture and low water-holding capacity of this soil make it drouthy. No attempt should be made to build up a large reserve of organic matter, as the open nature of this soil makes it impossible to do so. Sweet clover can be grown to advantage after testing the soil for acidity, as directed in Circular 346, and applying the necessary amount of limestone. Following sweet clover, alfalfa should do well, but if alfalfa is to be grown the soil should be tested for available phosphorus, as directed in Circular 421; and if found deficient in this essential constituent, one of the phosphates should be applied before seeding the alfalfa. After legumes have been grown, this soil will produce fairly good corn except in years when the rainfall is deficient during the growing season.

Wabash loam (73)

Wabash loam occurs as narrow bottom land along Drummer creek and Middle Fork creek in the southern part of the county. It occupies less than 4½ square miles and is therefore of little importance. This soil lacks uniformity because of the deposit of sediments of various kinds by the frequent overflows that occur. It consists for the most part of silt loam but contains spots of clay loam and of sandy loam. The danger of overflow limits the usefulness of this soil to summer crops and pasture.

Muck (103)

The largest area of Muck in Ford county is about two miles northeast of Elliott. It occupies a low area in the old swamp along the West Branch of Middle Fork creek. The total area of the type in the county is only a little over one-half square mile. The upper portion is a mixture of well-decayed organic material and mineral particles, and is dark brown to black in color. The depth of this deposit varies somewhat but lies between 2 and 4 feet. At its bottom a thin layer of peat is sometimes found, and the material beneath the peat, or the muck where the peat is absent, is a gray, highly calcareous, fine-grained, marl-like material. This area and also the other Muck areas were shallow lakes until very recently.

Use and Management Suggestions.—This soil grows good corn but for the best results should be treated with potash. It is not suited to small grains, but is well adapted to timothy.

SUMMARY OF IMPORTANT CHARACTERISTICS OF FORD COUNTY SOILS

A summary of some of the agriculturally more significant characteristics of the soil types shown on the soil map of Ford county is presented in Table 3, page 25. Topography, drainage, acidity, and the contents of organic matter and available phosphorus are all indicated, together with an index of the productivity of each soil type, in untreated condition, for crops, pasture, and forest.

The information in this table is necessarily general and should not be taken to mean that *every* farm or field of a given soil type will exhibit the exact characteristics indicated here. As already pointed out, acidity and productivity may vary markedly within areas of the same type; and for that reason every field should be tested as recommended in the more detailed discussion of the type, and treatments should be based on the results of the tests.

It must also be remembered that soils differ in adaptation and in their response to soil treatment, and that these differences are not always definitely indicated by the productivity indexes. Since it would be impracticable to present such differences in terms of simple index numbers, readers must depend on the management discussion under each soil type for those details.

TABLE 3.—FORD COUNTY SOILS: SUMMARY OF CHARACTERISTICS, PROPERTIES, AND ADAPTATION

Type No.	Type name	See page[1]	Topography[2]	Drainage[3]		Reaction	Available phosphorus	Organic matter	Productivity index[4]		
				Surface	Under				Field crops	Pas-ture	For-estry
18	Clinton silt loam	21	Gently rolling	Moderate	Moderate	Medium acid	Low	Low	5	A	A
21	Lindley silt loam	21	Gently rolling to rolling	Moderate to rapid	Moderate to slow	Medium acid	Low	Low	5–6[7]	A	A
67	Harpster clay loam	22	Nearly level	Slow	Moderate	Alkaline	High	High	1–3		
73	Wabash loam	24	Nearly level	Slow	Moderate	Neutral to slightly acid	Medium	Medium	2–5[6]	A	A
103	Muck	24	Depressional	Very slow	Moderate	Neutral	Medium	High	4		
145	Saybrook silt loam	16	Gently to strongly rolling	Moderate to rapid	Moderate	Medium acid	Low to medium	Low to medium	2–6[5]	A	A
146	Elliott silt loam	11	Undulating to rolling	Moderate to rapid	Slow	Medium acid	Low to medium	Medium high	3–6[5]		
146	Elliott silt loam mixed with Clarence	13	Undulating to rolling	Moderate to rapid	Slow to very slow	Medium acid	Low to medium	Low to medium	4–7[5]	A–C[5]	B
147	Clarence silt loam	13	Undulating to rolling	Moderate to rapid	Very slow	Medium acid	Low to medium	Low to medium	5–10[5]	A–C[5]	B
148	Proctor silt loam	17	Gently rolling	Moderate	Moderate to slow	Medium acid	Low	Medium	2–4[7]		
149	Brenton silt loam	19	Undulating	Moderate	Moderate	Slightly acid	Medium to high	High	1–2		
150	Onarga sandy loam	23	Gently rolling to rolling	Moderate	Rapid	Medium acid	Low	Low	6	C	A–B
151	Ridgeville fine sandy loam	19	Gently rolling	Moderate	Moderate	Medium acid	Medium to low	Medium	3–4		
152	Drummer clay loam	15	Nearly level	Slow	Moderate to very slow	Neutral	High	High	1–4[7]		
153	Pella clay loam	20	Nearly level	Slow	Moderate	Neutral	High	High	1–2		

[1] For description of soil type turn to page indicated.

[2] Topography is expressed by the following terms based on the respective slopes: *nearly level*, less than .5 percent slope; *undulating*, .5 to 1.5 percent; *gently rolling*, 1.5 to 3.5 percent; *rolling*, 3.5 to 7 percent; *strongly rolling*, 7 to 15 percent; *steep*, greater than 15 percent.

[3] Of the terms used to express drainage, *moderate* expresses the most desirable drainage.

[4] The index number assigned to a soil type for production of field crops is based on the ability of the type to produce the major crops grown in the region, without soil treatment but with the soil in a cleared and drained condition. The scale used is 1 to 10, the *most productive soil* in the state being rated as 1 and the *least productive* as 10. The indexes for pasture and forest are indicated by A, B, and C; A signifying the best and C the poorest.

[5] Given variable rating because of difference in degree of erosion.

[6] Given variable rating because of variation in overflow hazard.

[7] Given variable rating because of variation in permeability.

ALPHABETICAL INDEX TO SOIL TYPES

Brenton silt loam 19

Clarence silt loam 13

Clinton silt loam 21

Drummer clay loam 15

Elliott silt loam 11

Elliott silt loam mixed with Clarence 13

Harpster clay loam 22

Lindley silt loam 21

Muck 24

Onarga sandy loam 23

Pella clay loam 20

Proctor silt loam 17

Ridgeville fine sandy loam 19

Saybrook silt loam 16

Wabash loam 24

SOIL REPORTS PUBLISHED

1 Clay, 1911
2 Moultrie, 1911
3 Hardin, 1912
4 Sangamon, 1912
5 LaSalle, 1913
6 Knox, 1913
7 McDonough, 1913
8 Bond, 1913
9 Lake, 1915
10 McLean, 1915
11 Pike, 1915
12 Winnebago, 1916
13 Kankakee, 1916
14 Tazewell, 1916
15 Edgar, 1917
16 DuPage, 1917
17 Kane, 1917
18 Champaign, 1918
19 Peoria, 1921
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*22 Iroquois, 1922
23 DeKalb, 1922
24 Adams, 1922
*25 Livingston, 1923
26 Grundy, 1924
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28 Mason, 1924
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31 Rock Island, 1925
32 Randolph, 1925
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48 Effingham, 1931
49 Wayne, 1931
50 Macoupin, 1931
51 Fulton, 1931
52 Fayette, 1932
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54 Ford, 1933
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56 Schuyler, 1934
57 Clinton, 1936
58 Washington, 1937
59 Marshall, 1937
60 Putnam, 1937
61 Wabash, 1937
62 Vermilion, 1938
63 St. Clair, 1938
64 Stark, 1939
65 Boone, 1939
66 Shelby, 1939
67 DeWitt, 1940
68 Jasper, 1940
69 Cumberland, 1940

(*Withdrawn from general circulation)

809—2-41—20550

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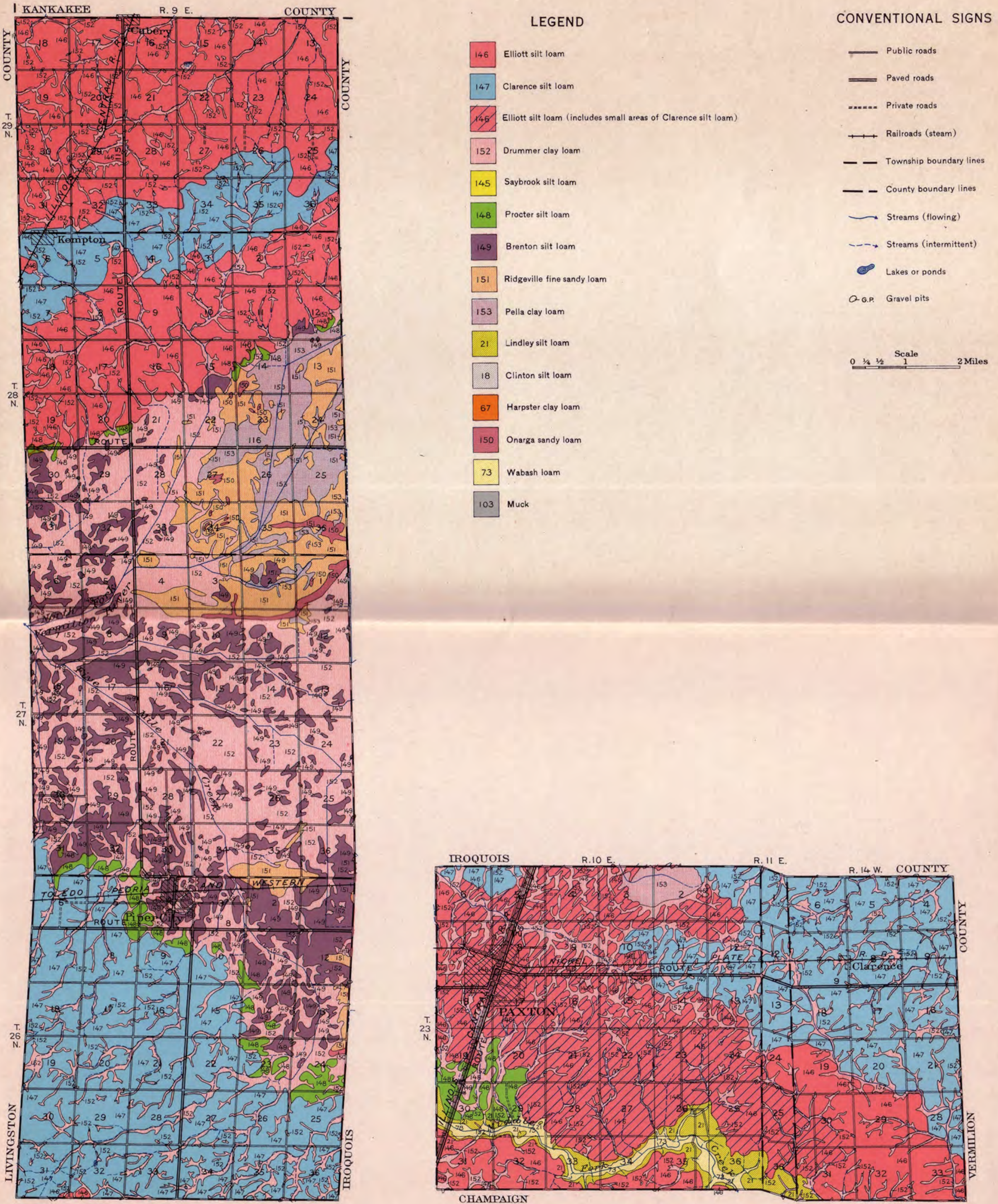

LEGEND

146	Elliott silt loam
147	Clarence silt loam
146	Elliott silt loam (includes small areas of Clarence silt loam)
152	Drummer clay loam
145	Saybrook silt loam
148	Procter silt loam
149	Brenton silt loam
151	Ridgeville fine sandy loam
153	Pella clay loam
21	Lindley silt loam
18	Clinton silt loam
67	Harpster clay loam
150	Onarga sandy loam
73	Wabash loam
103	Muck

CONVENTIONAL SIGNS

Public roads
Paved roads
Private roads
Railroads (steam)
Township boundary lines
County boundary lines
Streams (flowing)
Streams (intermittent)
Lakes or ponds
G.P. Gravel pits

LITHO. EASTERN OFFSET INC., BALTO.

SOIL SURVEY MAP OF FORD COUNTY
UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

LEGEND

146	Elliott silt loam
147	Clarence silt loam
146 ▨	Elliott silt loam (includes small areas of Clarence silt loam)
152	Drummer clay loam
145	Saybrook silt loam
148	Procter silt loam
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21	Lindley silt loam
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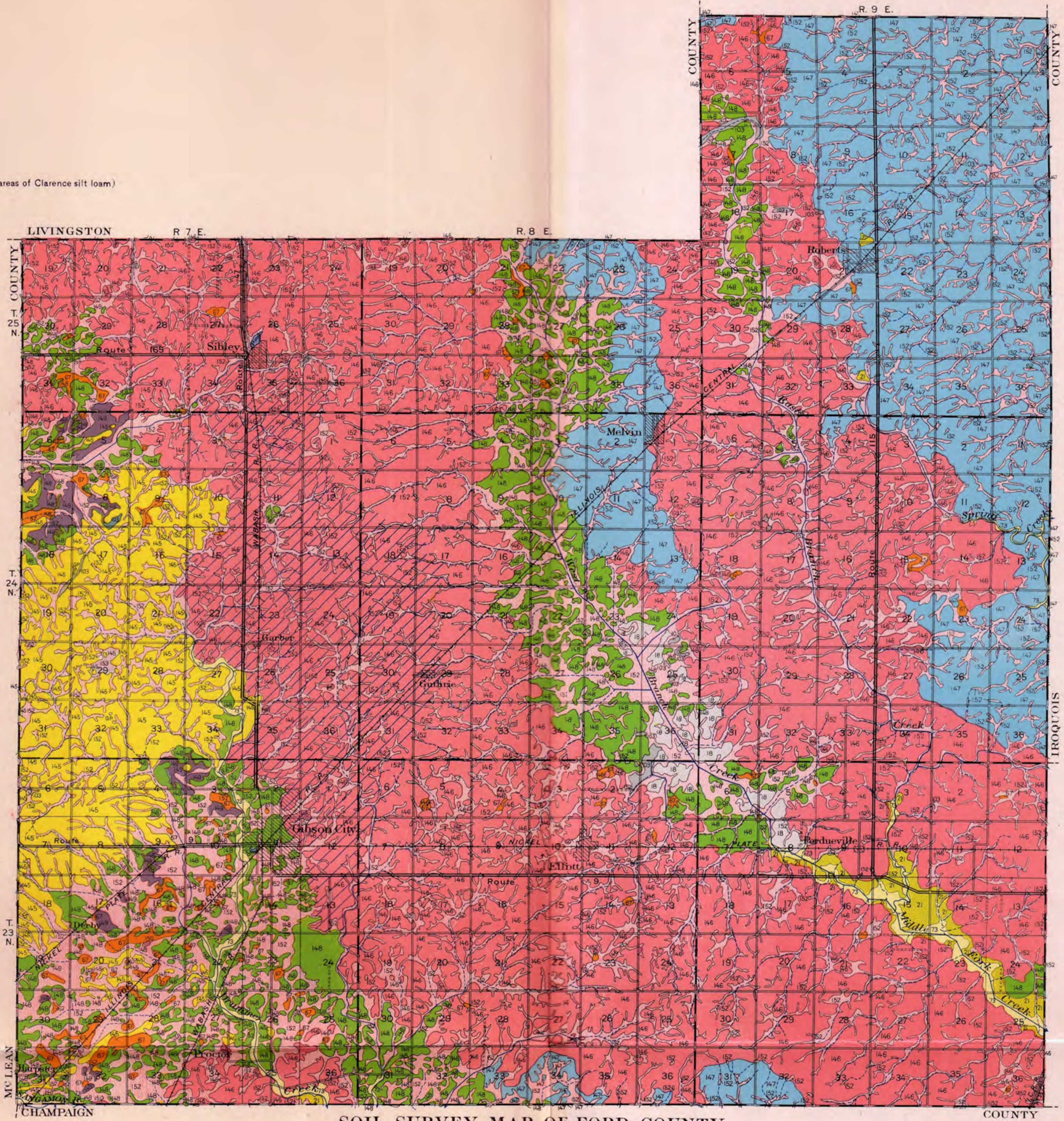
67	Harpster clay loam
150	Onarga sandy loam
73	Wabash loam
103	Muck



CONVENTIONAL SIGNS

——	Public roads
═══	Paved roads
------	Private roads
+—+—+	Railroads (steam)
— —	Township boundary lines
—— —	County boundary lines
⟶	Streams (flowing)
- - -⟶	Streams (intermittent)
●	Lakes or ponds
G.P.	Gravel pits

Scale
0 ¼ ½ 1 2 Miles

SOIL SURVEY MAP OF FORD COUNTY

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

LITHO. EASTERN OFFSET INC., BALTO.